



Re-burn Phenomena, and Wildland Fire Fighting Operations, in Commercial Forestry Plantations on Peat Soils in South Sumatra, Indonesia

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ABSTRACT – During the period of November 2015, I was the leader on a team involved in a wildland fire fighting operation in South Sumatra, Indonesia. The specific region involved was commercial forestry planted in an area of approximately 90% peatland. The primary surface fire behavior could have been anywhere else in the world, but the secondary surface fire behavior, and subsequent rapid full depth peat burn, was unlike anything that I had seen before in 25 years of wildland firefighting all over the world. Commercial forestry plantations planted in peat soils are unique in their sensitivity to wildfire. All sub-surface fires observed initially started on the surface and there was a very small-time window before the fire transitioned into the sub-surface fuels. Before the translocation of the fires into the sub-surface, even very low flame intensities caused the friable soils to collapse and weaken the tree root structures. Within 1 hour the live trees started falling over. The addition of the very heavy fuels to the peat fire caused a large scale re-burn that exacerbated the initial fire. Apart from the surface re-burn, the increased sub-surface fire intensity caused incineration to full peat depth, i.e. to the acidic clay level. The smoke pollution from the re-burn was much more intense as the newly added green fuels smoldered for an extended time before drying out. Once they were fully alight the new heavy fuels burned extremely hot with high residence times. The sustained surface heat pushed the peat fires to full depth, destroying thousands of years' worth of biomass accumulation. This presentation and paper documents some Indonesian fire events and includes successful strategies and tactics employed to minimize the devastating environmental, societal and economic losses that could quite possibly be classed as a globally influencing event. It also includes identifying the various phases of fire transition in peatland which provides critical new insights to peat fire suppression in tropical peat.

Keywords – Peat; wildfire; firefighting; Indonesia; fire